

REMARKS/ARGUMENTS

The rejections presented in the Office Action dated January 21, 2011 (hereinafter Office Action) have been considered. Claims 86-89, 91-93, 95-99, 101-107, 109, 112-119 and 121-123 remain pending in the application. Reconsideration of the pending claims and allowance of the application in view of the present response is respectfully requested.

Applicants are taking this opportunity to update passages of the specification that refer to U.S. patent applications. No new matter has been added.

Independent claim 86 is being amended to recite that the sleep state informed therapy is provided “to the patient”. Claim 86 is also being amended to recite that not only the classifying, but also the detecting the sleep-wake status and the detecting REM sleep status are performed at least in part implantably. Support can be found throughout the original application, see e.g. page 8, lines 6-11. Independent claim 104 is being amended to recite more specifically that the implantable cardiac rhythm management device is “configured to be implanted in a pectoral region of a patient”. Claim 104 is also being amended to recite that the cardiac therapy is provided “to the patient” based on “the” sleep state classification. No new matter has been added.

The undersigned wishes to thank Examiner Helen Nguyen and Primary Examiner Jeff Hoekstra for the courtesy of a telephone interview which took place on March 31, 2011, and in which the undersigned attorney participated on behalf of Applicants. The arguments provided herein were presented by the undersigned as warranting allowance of the pending claims. Some of the claim amendments above were suggested by Examiner Hoekstra as helping to tighten the claims relative to the references.

The Office Action rejected claims 86, 88, 89, 91-93, 95-99, 101, 104, 106, 107, 109, 112-117, and 121 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent 5,902,250 (Verrier et al.), hereinafter “Verrier”, in view of U.S. Patent Application Publication US 2005/0119711 (Cho et al.), hereinafter “Cho”, further in view of U.S. Patent 5,187,657 (Forbes). Applicants respectfully traverse, particularly in view of the amendments being made to independent claims 86 and 104.

These rejections are substantially similar to the rejections made in the prior office action, except, in place of the Young reference (US 2003/0083241), the new Forbes reference (5,187,657) is substituted. We believe that the combination of references being asserted is still lacking in several respects.

For example, independent claim 86 is rejected based on Verrier in view of Cho and further in view of Forbes. Of these three references, Verrier and Forbes are the ones that specifically discuss REM sleep to any significant extent. (REM sleep is mentioned only once in Cho, and only in the background section.) Verrier discusses detecting REM sleep using a sensor 12 that is applied to the patient's eyelid – see FIG. 1 and column 6, line 23 to column 7, line 16. Forbes discusses detecting REM sleep using sensors 114 that are attached to an exterior surface of the patient – see FIG. 1; column 4, lines 42-68; and column 1, lines 35-52. Thus, even though Forbes contains the vague statement at column 3, lines 13-15 that “[f]or example, eye movement sensors, muscle atonia sensors, or brain wave sensors can be used for REM sleep state detection” (this passage cited in the Office Action), the reader would interpret this statement in the context of the Forbes disclosure, which is directed to a system that utilizes sensors or electrodes that are applied to the body surface, i.e., skin, of the patient.

Thus, none of the references fairly teaches detecting REM sleep status using (a) “a sensor disposed on a cardiac rhythm management device [that is] implanted in a pectoral region” as recited in claim 86, or even (b) any sensor implanted in a pectoral region of the patient, or even (c) any implanted sensor. In view of at least this missing element, the claimed invention would truly not have been obvious, even if the skilled person would have been provided with the asserted combination of references.

Moreover, although the Office Action cites Cho as teaching an implantable sensor 62, Cho's sensor 62 is described (see paragraph 0043) as a piezoelectric element sensitive to body movements, i.e., an accelerometer, rather than any sensor suitable for sensing muscle tone as is set forth in claim 86.

In view of these deficiencies of the asserted references, we respectfully submit that the method of claim 86 would truly not have been obvious in view of these references.

Furthermore, the amendments to claim 86 serve to further distinguish the claimed method over the references.

Independent device claim 104 is being rejected on the same combination of Verrier, Cho, and Forbes. The claimed implantable cardiac rhythm management device is “configured to be implanted in a pectoral region of a patient”, such device including each of the recited detector system, classification system, and therapy system. The deficiencies of the references pointed out above in connection with claim 86 are also applicable to the rejection of claim 104. Therefore, for analogous reasons, the device of claim 104 is submitted to be clearly patentable over the asserted references.

Thus, the rejections of claims 86 and 104, and of their respective dependent claims 88, 89, 91-93, 95-99, 101, 106, 107, 109, 112-117, and 121, cannot be sustained and should be withdrawn.

The Office Action went on to reject claims 87 and 105 under 35 U.S.C. §103(a) as being unpatentable over Verrier in view of Cho and Forbes, further in view of U.S. Patent 6,387,907 (Hendricks et al.), hereinafter “Hendricks”. The Office Action further rejected claims 99, 118, and 119 under 35 U.S.C. §103(a) as being unpatentable over Verrier in view of Cho and Forbes, further in view of U.S. Patent 6,572,557 (Tchou et al.), hereinafter “Tchou”. The Office Action also rejected claims 102, 103, 122, and 123 under 35 U.S.C. §103(a) as being unpatentable over Verrier in view of Cho and Forbes, further in view of U.S. Patent Application Publication US 2003/0111079 (Mathews et al.), hereinafter “Mathews”, further in view of U.S. Patent Application Publication US 2004/0249299 (Cobb).

In response, Applicants respectfully submit that these rejections cannot be sustained at least in view of the patentability of base claims 86 and 104. Withdrawal of the rejection of dependent claims 87, 99, 102, 103, 105, 118, 119, 122, and 123 is respectfully requested.

To the extent the current response does not respond to any characterization in the Office Action of the asserted art or of the claimed subject matter, or to any application in the Office Action of the asserted art to any claimed subject matter, any such lack of response should not be interpreted as an acquiescence to such characterizations or applications. A detailed discussion of each of the Office Action’s characterizations, or any other assertions or statements beyond

that provided above is unnecessary. The right to address any such assertions or statements in the future is reserved.

Authorization is given to charge Deposit Account No. 50-3581 (GUID.060PA) any necessary fees for this filing. If the Examiner believes it necessary or helpful, the Examiner is invited to contact the undersigned attorney to discuss any issues related to this case.

Respectfully submitted,

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Date: April 15, 2011

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